IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application : **10/518,253**

Applicant(s) : **LESELLIER, Estelle**

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Examiner : **THOMAS, Mia M.**

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Title: **METHOD OF DETECTING BLOCKING ARTEFACTS**

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Commissioner for Patents
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APPEAL UNDER 37 CFR 41.37

Sir:

This is an appeal from the decision of the Examiner dated 3 September 2008, finally rejecting claims 1-20 of the subject application.

This paper includes (each beginning on a separate sheet):

1. **Appeal Brief;**
2. **Claims Appendix;**
3. **Evidence Appendix; and**
4. **Related Proceedings Appendix.**

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to **Koninklijke Philips Electronics N. V.**

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-20 are pending in the application.

Claim 9 stands rejected by the Examiner under 35 U.S.C. 101.

Claim 9 stands rejected by the Examiner under 35 U.S.C. 112, second paragraph.

Claims 1-20 stand rejected by the Examiner under 35 U.S.C. 103(a).

These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

An amendment was filed on 26 November 2008, subsequent to the final rejection in the Office Action dated 3 September 2008, correcting typographical errors. The admittance of this amendment is pending at the time of filing this appeal brief.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention addresses a method and system for correcting artifacts introduced in an image due to the discontinuities introduced by block encoding processes (Applicant's page 1, lines 1-5). Although the edges of the blocks generally form a regular grid, the inventor noticed that the re-encoding of an image, for example, after scaling or aspect ratio changes, introduces secondary, non-uniform patterns (page 2, lines 8-19). In this invention, the location of block artifacts are not assumed to be uniformly spaced, and instead of finding a periodicity of distances between blocking artifacts, each row is assumed to be a potential row of blocking artifacts (page 2, lines 24-26). Pixels that exhibit discontinuities are identified (110 in FIG. 1; page 4, lines 1-6), and processed to determine whether these discontinuities correspond to blocking artifacts (120; page 4, lines 14-15). To detect a grid corresponding to the blocking artifacts, each row in the horizontal and vertical direction is assessed to locate rows that have a higher density of artifacts than its neighboring rows (130; page 6, lines 11-13). Because the artifacts may be the result of primary sampling or secondary resampling, two types of discontinuity are preferably detected (p1, p2 of FIG. 2; page 4, lines 19-25), and different corrections are preferably applied to each type (FIG. 3; page 8, lines 9-11; FIG. 4; page 8, line 33 – page 9, line 5).

As claimed in independent claim 1, the invention comprises a method of processing data corresponding to pixels of a sequence of digital images so as to detect a grid corresponding to blocking artifacts, comprising (FIG. 1):

high-pass filtering (110) a portion of a digital image to supply at least one set of discontinuity pixels (page 4, lines 1-6),

detecting (120) blocking artifacts from the at least one set of discontinuity pixels (page 4, lines 14-15), and

searching (130) rows within the portion for a grid row having a density of blocking artifacts that is substantially larger than that of its neighboring rows (page 6, lines 11-13).

As claimed in dependent claim 2, the invention comprises the method of claim 1, wherein the searching (130 of FIG. 1) includes:

selecting (131), in a row of the portion of the image, segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold (page 6, lines 14-17);

computing (132) a blocking artifact level per row on the basis of values of pixels of the selected segments (page 6, lines 24-26); and

determining (133) the grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows (page 7, lines 1-2).

As claimed in dependent claim 4, the invention comprises the method of claim 1, including validating (140) to determine whether a grid is present within the portion of the digital image if the number of grid rows found in said portion is higher than a second predetermined threshold (page 7, lines 29-31).

As claimed in independent claim 8, the invention comprises a television receiver (page 9, lines 16-17) comprising (FIG. 1):

a screen that includes pixels arranged in rows (page 8, lines 31-32), and

a processing device (page 1, lines 6-7) that is configured to:

high-pass filter (110) a portion of a digital image to supply at least one set of discontinuity pixels (page 4, lines 1-6),

detect (120) blocking artifacts from the at least one set of discontinuity pixels (page 4, lines 14-15),

search (130) rows within the portion for a grid row having a density of blocking artifacts that is substantially larger than that of its neighboring rows (page 6, lines 11-13),

correct (FIG. 3) the blocking artifacts situated in the grid row to provide a corrected digital image (page 8, lines 11-32), and

display corrected digital images on the screen (page 8, line 32).

As claimed in dependent claim 9, the invention comprises a computer-readable medium that includes a program product comprising a set of instructions which, when loaded into a circuit, cause said circuit to perform the method of processing digital images as claimed in claim 1 (page 9, lines 17-21).

As claimed in dependent claim 12, the invention comprises the receiver of claim 8, wherein the processing device is configured to:

select (131), in a row of the portion of the image, segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold (page 6, lines 14-17);

compute (132) a blocking artifact level per row based on values of pixels of the selected segments (page 6, lines 24-26); and

determine (133) the grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows (page 7, lines 1-2).

As claimed in dependent claim 13, the invention comprises the receiver of claim 8, including a validation system (140) that is configured to validate a presence of the grid row by comparing a total number of grid rows found to a threshold value (page 7, lines 29-31).

As claimed in independent claim 15, the invention comprises a display system comprising:

a display screen that includes pixels arranged in rows (page 8, lines 31-32),

a high-pass filter (110) that is configured to filter a portion of a digital image to supply at least one set of discontinuity pixels (page 4, lines 1-6),

a detector (120) that is configured to search (130) rows within the portion for a grid row having a density of blocking artifacts that is substantially larger than that of its neighboring rows (page page 4, lines 14-15; page 6, lines 11-13), and

a correction system (FIG. 3) that is configured to correct the blocking artifacts situated in the grid row to provide a corrected digital image for display on the display screen (page 8, lines 11-32).

As claimed in dependent claim 16, the invention comprises the system of claim 15, wherein the detector is configured to:

select (131), in a row of the portion of the image, segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold (page 6, lines 14-17);

compute (132) a blocking artifact level per row based on values of pixels of the selected segments (page 6, lines 24-26); and

determine (133) the grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows (page 7, lines 1-2).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claim 9 stands rejected under 35 U.S.C. 101.

Claim 9 stands rejected under 35 U.S.C. 112, second paragraph.

Claims 1-3, 5-7, and 9 stand rejected under 35 U.S.C. 103(a) over Drouot et al. (WO 01/120912, hereinafter Drouot) and Mancuso et al. (USP 6,285,801, hereinafter Mancuso).

Claim 4 stands rejected under 35 U.S.C. 103(a) over Drouot, Mancuso, and Jung et al. (USP 6,822,675, hereinafter Jung).

Claims 8 and 10-12 stand rejected under 35 U.S.C. 103(a) over Kim (USP 6,950,473), Mancuso, and Drouot.

Claim 13 stands rejected under 35 U.S.C. 103(a) over Kim, Mancuso, Drouot, and Jung.

Claim 14-16 stands rejected under 35 U.S.C. 103(a) over Kim, Mancuso, Drouot, and Astle (USP 5,590,064).

Claims 17-20 stand rejected under 35 U.S.C. 103(a) over Kim, Mancuso, Drouot, Astle, and Jung.

VII. ARGUMENT

Claim 9 stands rejected under 35 U.S.C. 101

35 U.S.C. 101 states:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

Claim 9

Claim 9 claims a computer medium that includes a program product comprising a set of instructions which, when loaded into a circuit, cause said circuit to perform a set of acts.

MPEP 2106 states:

> "a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory".

The Office action acknowledges that computer-readable medium that contains functional material is statutory subject matter, but asserts that if the specification notes that signals are computer-readable media, the computer-readable medium becomes non-statutory subject matter. The applicant respectfully disagrees with this assertion.

Signals are computer-readable regardless of whether a specification makes note of this fact. MPEP 2106 acknowledges that computer-readable media includes signals, yet does not summarily conclude that all claims to computer-readable media are to be rejected as being drawn to non-statutory subject matter.

Because claim 9 claims a computer element that permits the computer's function to be realized, thereby constituting a new and useful machine, the applicant respectfully maintains that the rejection of claim 9 under 35 U.S.C. 101 is unfounded, and should be reversed by the Board.

Claim 9 stands rejected under 35 U.S.C. 112, second paragraph

35 U.S.C. 112 states:

> "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

Claim 9

Claim 9 particularly points out and distinctly claims a computer medium that causes a circuit to perform the method of claim 1. The applicant respectfully notes that the Office action does not assert that the method of claim 1 is unpatentable under 35 U.S.C. 112, second paragraph; accordingly, claim 1 is presumed to particularly point out and distinctly claim the applicant's invention. The applicant respectfully maintains that the embodiment of a clear and distinct method into a computer program on a computer medium does not render the claim less clear or distinct, because writing computer programs to implement a processing method is a commonly known technique of embodying such a method.

The Office action asserts that there "is insufficient antecedent basis" for the term "computer medium" in the claim. The applicant notes that the term is preceded by the indefinite article "a", and therefore does not require an antecedent basis in the claim.

The Office action asserts that the "specification of this instant application is not supported by the term "computer medium"." (Office action, page 2, item 3.) The applicant notes that a term cannot support a specification. Assuming in argument that the Office action intended to assert that the term "computer medium" is not supported in the specification, the applicant respectfully disagrees.

At page 9, lines 16-21, the applicant specifically teaches:

> "It is possible to implement the processing method according to the invention by means of a television receiver circuit, said circuit being suitably programmed. A computer program stored in a programming memory may cause the circuit to perform the different operations described hereinbefore with reference to FIG. 1. The computer program may also be loaded into the programming memory for reading a data carrier such as, for example, a disc comprising said program."

The Office action seems to imply that the same exact words need to be used in the specification and claims. The applicant respectfully disagrees. As specifically stated in MPEP 2163.02:

> "The subject matter of the claim need not be described literally (i.e., using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement."

Because claim 9 particularly points out and distinctly claims the subject matter that the applicant regards as his invention, the applicant respectfully maintains that the rejection of claim 9 under 35 U.S.C. 112, second paragraph, is unfounded, and should be reversed by the Board.

Claims 1-3, 5-7, and 9 stand rejected under 35 U.S.C. 103(a) over Drouot and Mancuso, and Claim 4 stands rejected under 35 U.S.C. 103(a) over Drouot, Mancuso, and Jung

Claims 1-3, 5-7, and 9

The combination of Drouot and Mancuso does not disclose searching rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, as specifically claimed in claim 1, upon which claims 2-7 and 9 depend.

The Office action acknowledges that Drouot does not disclose searching rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows (Office action, page 5, last 2 lines), and asserts that Mancuso provides this teaching at Figure 4, column 5, line 8(-29), and column 1, lines 58(-67) (Office action page 6, first paragraph). The applicant respectfully disagrees with this assertion.

Mancuso assumes a uniform grid pattern (Mancuso, column 6, lines 6-13), and identifies block boundaries 404 and 504 in Figures 4 and 5, but does not disclose how these block boundaries are determined. Presumably, Mancuso either assumes that the block boundaries are known, or can be determined using conventional techniques based on detection of repeating spaces between discontinuities. The Office action fails to specifically identify where Mancuso teaches detecting a grid of artifacts based on the density of blocking artifacts among rows, as claimed by the applicant.

The Office action points out that Mancuso teaches that image rows contain a target pixel, and that fuzzy logic is used to determine the number of pixels to be processed. Among these pixels, Mancuso teaches determining the difference in gray scales among the target pixel and its neighbors, and smoothes abrupt transitions in gray levels using a dual ramp generator. (Office action, page 6, first paragraph, referencing Mancuso column 5, lines 8-29). The applicant concurs that Mancuso provides these teachings, but respectfully notes that these teachings have no relevance to the claimed element of determining the density of artifacts in a row relative to neighboring rows. Nowhere in the Office action's referenced cites does Mancuso address a density of artifacts, and in particular, nowhere in the Office action's referenced cites does Mancuso address searching rows for relative densities of profiles.

The Office action also references Mancuso's Global Metrics Extractor (104 in FIG. 1) as having some bearing on the features of claim 1. The applicant respectfully notes that the output of Mancuso's Global Metrics Extractor (104) is a pair of values H_S and V_S that report the average gradient value ("edge-ness") of the image window being evaluated:

> "The results of the horizontal Sobel-like gradient operator h_s and the vertical Sobel-like gradient operator v_s applied to the 4*8 processing window 304 are averaged to compute a horizontal global metric H_S and a vertical global metric V_S, respectively. … Thus, the horizontal global metric H_S and vertical global metric V_S are indicative of the degree of "edgeness" of the 4*8 processing window 304." (Mancuso, column 4, lines 29-41.)

These metrics H_S and V_S are used to determine a length of a filter that is subsequently used to smooth the blocking artifacts within the image processing window, and have no bearing on the claimed searching of rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows.

Because Mancuso fails to teach or suggest searching rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, and because the Office action fails to identify where Mancuso provides this teaching, the applicant respectfully maintains that the above cited rejections of claims 1-7, and 9 under 35 U.S.C. 103(a) that rely upon Mancuso for this teaching are unfounded, and should be reversed by the Board.

Claims 2-4

The combination of Drouot and Mancuso fails to disclose selecting, in a row of the portion of the image, segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold; computing a blocking artifact level per row on the basis of values of pixels of the selected segments; and determining the grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows, as claimed in claim 2, upon which claims 3-4 depend.

The Office action asserts that Mancuso provides this teaching, but fails to identify where Mancuso teaches identifying segments comprising a number of consecutive blocking artifacts that is higher than a first threshold, fails to identify where Mancuso teaches computing a artifact level per row based on these segments, and fails to identify where Mancuso teaches determining the grid row based on these computed artifact levels, as specifically claimed.

The Office action cites Mancuso's FIG. 3, and the corresponding text at column 4, lines 4-8 to support the assertion that Mancuso provides the above teachings. The applicant respectfully notes that the cited figure and text do not disclose the claimed features of claim 2. Mancuso's FIG. 3 and the text at column 4 define the process of determining the above mentioned parameters H_S and V_S based on the degree of change (gradient) from pixel to pixel. This process does not determine a blocking artifact level per row; at best, it may be said to determine a blocking artifact level (H_S, V_S) per image processing window. These determined parameters are also not compared, row to row, to determine grid lines, as claimed.

The Office action also cites Mancuso's FIG. 4 and text at column 6, lines 4-9 to support the assertion that Mancuso provides the above teachings. The applicant respectfully notes that the cited figure and text do not disclose the claimed features of claim 2. Mancuso's FIG. 4 illustrates the horizontal processing window to which the above mentioned parameters H_S and V_S are applied. The cited text at column 6 refers to FIG. 6 and details the operation of the 'de-interlacer' 602; this material appears to be unrelated to either Mancuso's FIG. 4 or the features of the applicant's claim 2. In any event, neither the cited figure or cited text teaches computing a blocking artifact level per row on the basis of values of pixels of selected segments, or determining a grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows, as claimed in claim 2.

Because Mancuso fails to teach the features of claim 2, and the Office action fails to identify where Mancuso teaches the features of claim 2, the applicant respectfully maintain that the cited rejections of claims 2-4 under 35 U.S.C. 103(a) that rely on Mancuso for this teaching are unfounded, and should be reversed by the Board.

Claims 8 and 10-12 stand rejected under 35 U.S.C. 103(a)
over Kim, Mancuso, and Drouot,
Claim 13 stands rejected under 35 U.S.C. 103(a)
over Kim, Mancuso, Drouot, and Jung, and
Claim 14 stands rejected under 35 U.S.C. 103(a)
over Kim, Mancuso, Drouot, and Astle

Claims 8 and 10-14

The combination of Kim, Mancuso, and Drouot fails to disclose a processing device that searches rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, as specifically claimed in claim 8, upon which claims 10-14 depend.

As in the rejection of claim 1, detailed above, the Office action relies on Mancuso for teaching a processing device that searches rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, and provides the same references to Mancuso to support this rejection.

As noted above, Mancuso fails to teach or suggest searching rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, and the Office action fails to identify where Mancuso provides this teaching. Accordingly, the applicant respectfully maintains that the above cited rejections of claims 8 and 10-14 under 35 U.S.C. 103(a) that rely upon Mancuso for this teaching are unfounded, and should be reversed by the Board.

Claim 12

The combination of Kim, Mancuso, and Drouot fails to disclose a processing device that selects segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold, fails to disclose a processing device that computes a blocking artifact level per row based on values of pixels of the selected segments, and fails to disclose a processing device that determines a grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows, as specifically claimed in claim 12.

As in the rejection of claim 2, detailed above, the Office action relies on Mancuso for teaching the elements of claim 12.

As noted above, Mancuso fails to teach or suggest selecting segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold, fails to teach or suggest a processing device that computes a blocking artifact level per row based on values of pixels of the selected segments, and fails to teach or suggest a processing device that determines a grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows. As also noted above, the Office action fails to identify where Mancuso provides these teachings. Accordingly, the applicant respectfully maintains that the above cited rejection of claim 12 under 35 U.S.C. 103(a) that relies upon Mancuso for this teaching is unfounded, and should be reversed by the Board.

Claim 15-16 stands rejected under 35 U.S.C. 103(a)
over Kim, Mancuso, Drouot, and Astle, and
Claims 17-20 stand rejected under 35 U.S.C. 103(a)
over Kim, Mancuso, Drouot, Astle, and Jung

Claim 15-20

The combination of Kim, Mancuso, and Drouot fails to disclose a detector that searches rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, as specifically claimed in claim 15, upon which claims 16-20 depend.

In this rejection, as in the rejection of claim 1, detailed above, the Office action relies on Mancuso for teaching the searching of rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, and provides the same references to Mancuso to support this rejection.

As noted above, Mancuso fails to teach or suggest searching rows for a row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, and the Office action fails to identify where Mancuso provides this teaching. Accordingly, the applicant respectfully maintains that the above cited rejections of claims 15-20 under 35 U.S.C. 103(a) that rely upon Mancuso for this teaching are unfounded, and should be reversed by the Board.

Claim 16

The combination of Kim, Mancuso, and Drouot fails to disclose selecting segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold, fails to disclose computing a blocking artifact level per row based on values of pixels of the selected segments, and fails to disclose determining a grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows, as specifically claimed in claim 16.

As in the rejection of claim 2, detailed above, the Office action relies on Mancuso for teaching the elements of claim 16.

As noted above, Mancuso fails to teach or suggest selecting segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold, fails to teach or suggest a processing device that computes a blocking artifact level per row based on values of pixels of the selected segments, and fails to teach or suggest a processing device that determines a grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows. As also noted above, the Office action fails to identify where Mancuso provides these teachings. Accordingly, the applicant respectfully maintains that the above cited rejection of claim 16 under 35 U.S.C. 103(a) that relies upon Mancuso for this teaching is unfounded, and should be reversed by the Board.

CONCLUSIONS

Because the Office action fails to provide a prima facie case of obviousness by identifying where the applicant's claimed features are found in the prior art, and because the cited prior art fails to teach each of the features of each of the applicant's independent claims, the applicant respectfully requests that the Examiner's rejections of claims 1-20 under 35 U.S.C. 103(a) be reversed by the Board, and the claims be allowed to pass to issue.

Because the Office action fails to provide a prima facie case of obviousness by identifying where the applicant's claimed features are found in the prior art, and because the cited prior art fails to teach each of the features of each of the applicant's dependent claims 2, 12, and 16, the applicant respectfully requests that the Examiner's rejections of claims 2-4, 12, and 16 under 35 U.S.C. 103(a) be reversed by the Board, and the claims be allowed to pass to issue.

Because claim 9 claims a new and useful machine element in clear and distinct terms, the applicant the applicant respectfully requests that the Examiner's rejection of claim 9 under 35 U.S.C. 101 and 35 U.S.C. 112, second paragraph, be reversed by the Board, and the claims be allowed to pass to issue.

Respectfully submitted

/Robert M. McDermott/
Robert M. McDermott, Attorney
Registration Number 41,508
patents@lawyer.com
804-493-0707

Please direct all correspondence to:
Corporate Counsel
U.S. PHILIPS CORPORATION
P.O. Box 3001
Briarcliff Manor, NY 10510-8001

CLAIMS APPENDIX

1. A method of processing data corresponding to pixels of a sequence of digital images so as to detect a grid corresponding to blocking artifacts, comprising:

high-pass filtering a portion of a digital image to supply at least one set of discontinuity pixels,

detecting blocking artifacts from the at least one set of discontinuity pixels, and

searching rows within the portion for a grid row having a density of blocking artifacts that is substantially larger than that of its neighboring rows.

2. The method of claim 1, wherein the searching includes:

selecting, in a row of the portion of the image, segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold;

computing a blocking artifact level per row on the basis of values of pixels of the selected segments; and

determining the grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows.

3. The method of claim 2, including measuring the image quality by adding the blocking artifact levels of the different rows of the grid for the portion of the image.

4. The method of claim 1, including validating to determine whether a grid is present within the portion of the digital image if the number of grid rows found in said portion is higher than a second predetermined threshold.

5. The method of claim 1, wherein the high-pass filtering supplies two sets of discontinuity pixels, one horizontal set and one vertical set.

6. The method of claim 1, wherein detecting the blocking artifacts includes detecting a first type of blocking artifacts and a second type of blocking artifacts from the at least one set of discontinuity pixels.

7. The method of claim 6, including correcting the blocking artifacts situated in the grid rows in accordance with their type.

8. A television receiver comprising:

a screen that includes pixels arranged in rows, and

a processing device that is configured to:

high-pass filter a portion of a digital image to supply at least one set of discontinuity pixels,

detect blocking artifacts from the at least one set of discontinuity pixels,

search rows within the portion for a grid row having a density of blocking artifacts that is substantially larger than that of its neighboring rows,

correct the blocking artifacts situated in the grid row to provide a corrected digital image, and

display corrected digital images on the screen.

9. A computer-readable medium that includes a program product comprising a set of instructions which, when loaded into a circuit, cause said circuit to perform the method of processing digital images as claimed in claim 1.

10. The receiver of claim 8, wherein the processor is configured to detect a first type of blocking artifact and a second type of blocking artifact from the at least one set of discontinuity pixels.

11. The receiver of claim 10, wherein the processor is configured to correct the blocking artifacts situated in the grid rows based on the type of blocking artifact.

12. The receiver of claim 8, wherein the processing device is configured to:

select, in a row of the portion of the image, segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold;

compute a blocking artifact level per row based on values of pixels of the selected segments; and

determine the grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows.

13. The receiver of claim 8, including a validation system that is configured to validate a presence of the grid row by comparing a total number of grid rows found to a threshold value.

14. The receiver of claim 8, wherein the processing device includes:

a plurality of discrete cosine transforms that are arranged to identify one or more frequency limits associated with the grid row, and

a correction unit that is configured to substantially reduce elements of the digital image that exceed these one or more frequency limits to form the corrected digital image.

15. A display system comprising:

a display screen that includes pixels arranged in rows,

a high-pass filter that is configured to filter a portion of a digital image to supply at least one set of discontinuity pixels,

a detector that is configured to search rows within the portion for a grid row having a density of blocking artifacts that is substantially larger than that of its neighboring rows, and

a correction system that is configured to correct the blocking artifacts situated in the grid row to provide a corrected digital image for display on the display screen.

16. The system of claim 15, wherein the detector is configured to:

select, in a row of the portion of the image, segments comprising a number of consecutive blocking artifacts that is larger than a predetermined first threshold;

compute a blocking artifact level per row based on values of pixels of the selected segments; and

determine the grid row based on a comparison of the blocking artifact levels of a current row and a set of neighboring rows.

17. The system of claim 16, including a validation system that is configured to validate a presence of the grid row by comparing a total number of grid rows found to a threshold value.

18. The system of claim 15, including a validation system that is configured to validate a presence of the grid row by comparing a total number of grid rows found to a threshold value.

19. The system of claim 15, wherein the correction system includes:

a plurality of discrete cosine transforms that are arranged to identify one or more frequency limits associated with the grid row, and

a correction unit that is configured to substantially reduce elements of the digital image that exceed these one or more frequency limits.

20. The system of claim 19, wherein the correction unit includes:

a filter that is configured to substantially eliminate components of an output of at least one of the discrete cosine transforms corresponding to frequencies above the one or more frequency limits to form a filtered transform, and

an inverse discrete cosine transform that is configured to convert the filtered transform into at least a portion of the corrected digital image.

EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.